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| EXAMINER |
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FLORY, CHRISTOPHER A

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| ART UNIT | PAPER NUMBER |
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3762

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/661,514

Applicant(s)

LIN, ABDADA

Examiner

Christopher A. Flory

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 10-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 3 is objected to because of the following informalities: claim 3 is written as being dependent from cancelled claim 2, where it should be dependent from currently pending claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leon et al. (US Patent 5,365,934) in view of Richter (US Patent 6,115,629, hereinafter referred to as Richter'629), and still further in view of Golen et al. (US Patent 5,318,487) or Barney (US Patent 4,312,358, hereinafter Barney'358).

Regarding claim 1, Leon et al. discloses a bi-point detection type heart-rate monitor comprising two electrically conductive contact terminals for touching of the two

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hands of a person (Fig. 1; Fig. 15, biopotential sensor 38; column 2, lines 1-8 and column 3, lines 33-45); an amplifier-filter circuit to amplify and remove noises from the sampled signal (Fig. 1, Filter/Amplifier 24; Fig. 6; column 6, line 64 through column 7, line 34); a processing and output circuit (signal processor 28 and display 32) adapted to receive and process a periodic signal, to obtain the mean frequency of that signal, and to output the frequency value obtained to a display unit (Fig. 8; column 1, lines 35-39; column 2, lines 9-24); and a detection unit (Figure 7, hands-off detector circuit) adapted to detect simultaneous touching of said contact terminals (column 3, lines 33-45) and to display the output frequency value to a display unit when the detection result is positive (Fig. 8).

It is noted that, although Leon et al. does not expressly disclose sampling an impedance signal but rather a biopotential signal (column 6, lines 51-66), impedance measurement is an inherent function of any bi-point detection type heart-rate monitor in that, for the constant current delivered to the circuit which is completed by contact with the hands, bioimpedance and voltage potential are directly proportional, analogous means of determining and analyzing a cardiac waveform representative of heart rate. This is also known prior art as admitted to by the applicant (page 1, line 20 through page 2, line 1 of the instant application).

Further regarding claim 1, Leon et al. discloses the instant invention substantially as claimed in claim 1 except for a waveform converter to rectify the amplifier-filter circuit output into a square wave before processing to obtain the mean frequency. Richter'629 teaches a square wave rectifier (Fig. 2B, square wave 228) to output a POLAR OUT

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signal in the form of a square wave having a period frequency corresponding to heart rate for the purpose of achieving a standard format which can interface with most exercise equipment as well as wireless heart rate detectors, and to use this signal in order to execute a heart rate calculation using the processor of the apparatus (column 5, lines 19-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system as taught by Leon et al. with the square wave rectifier as taught by Richter'629 for the same advantage of achieving a standard format that can interface with most exercise equipment and wireless heart rate detectors (motivation to combine provided by Richter'629, column 5, lines 19-67).

Still further regarding claim 1, Leon et al. discloses the instant invention substantially as claimed except for the step of producing a warning signal when the hands are not simultaneously touching the respective contact terminals. In the same field of endeavor, Golen et al. teaches the use of a warning signal in conjunction with an exercise system in order to prompt the user place his hands on the sensors so the computer can refresh the heart rate data and to deter the user from exercising beyond his aerobic level (column 4, lines 32-41). Also in the same field of endeavor, Barney'358 teaches using an audible alarm in conjunction with a heart beat monitor to warn a user if heart rate is too high or too low (column 9, lines 48-56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the Leon et al. device to include a warning signal when the contact terminals are not simultaneously touched for the same advantages of

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refreshing the heart rate data being monitored by the computer and to warn the user of an out-of-range heart rate that might indicate dangerous exertion levels (motivation to combine provided by Golen et al., column 4, lines 32-41 and Barney'358, column 9, lines 48-56).

Regarding claims 6-7, thin-film switches (e.g. piezo-sensor) and micro switches are well known in the art as a trigger means for contact detection circuits, and constitute an obvious design choice on the part of the inventor. Therefore, these claim limitations do not distinguish the instant application over the prior art.

Regarding claim 8, Leon et al. discloses that the processing and output circuit is a microprocessor (Fig. 2, microprocessor 40).

4. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leon et al. in view of Richter'629, and further in view of either Golen et al. or Barney'358 as applied to claim 1 above; and further in view of Ikeyama (US Patent 4,664,127, hereinafter Ikeyama'127).

Leon et al. in view of Richter'629, f.i.v. Golen et al. or Barney'358 discloses the instant invention substantially as claimed except that the detection unit comprises infrared transmitting and receiving devices centrally located in a hole disposed at the geographical center of the contact terminals. In the same problem solving area, Ikeyama'127 teaches the use of infrared LED sensors centrally located and recessed in a hole in the contact terminal (Fig. 2, LED sensor SE 8 centrally disposed around cylinder) for the purpose of verifying whether a heartbeat has been sensed, recognizing abnormalities, and alerting the user of any abnormal trends (ABSTRACT; column 4,

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lines 9-21 and lines 57-69). In the arrangement claimed by Ikeyama'127, proper gripping of the steering wheel (i.e. the contact terminal) would suggest that the palm of each of the right and left hand would be centered above an infrared LED sensor. Before a sensor can monitor and calculate a heart beat, it must inherently first recognize, through a change in sensor output value, that a hand has been placed above that particular sensor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the centrally disposed and recessed infrared LED sensors of the Ikeyama'127 patent in the Leon et al. device for the same advantages of recognizing that a hand has been placed over the sensor and sensing the heart beat of the user (motivation to combine provided by Ikeyama'127, column 4, lines 9-21 and 57-69).

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leon et al. in view of Richter'629 and in view of the applicant's admitted prior art (Admission), and still further in view of Golen et al. (US Patent 5,318,487) or Barney (US Patent 4,312,358, hereinafter Barney'358).

Regarding claim 9, Leon et al. discloses a bi-point heart-rate monitoring method comprising the steps of letting the hands of the person to be examined hold a respective contact terminal (column 6, lines 51-64); amplifying the impedance signal measured and removing noise (column 4, line 66 through column 5, line 3); driving a processing and output circuit to receive and process a periodic signal, to obtain the mean frequency of that signal, and to output the frequency value obtained to a display unit (Fig. 8; column

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1, lines 35-39; column 2, lines 9-24; column 9, line 45 through column 11, line 5); and a sub-step of detecting contact between the hands of the person to be examined and the contact terminals before proceeding to measure the impedance signal (Figures 8 & 9; column 7, lines 3-13; column 9, lines 11-31); and a sub-step of stopping monitoring action when the hands are not simultaneously touching the respective contact terminals (column 20, lines 52-60).

Further regarding claim 9, step (b), Leon et al. discloses the instant method substantially as claimed, but does not expressly disclose the step of applying a voltage to the contact terminals in order to measure the impedance signal between them. However, Admission teaches that a conventional heart-rate monitor will apply a proper voltage to two parts of the body, and then measure the frequency of the impulse signal (indicative of HR) after amplification (page 1, line 20 through page 2, line 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use an active electrode configuration and apply a voltage to the contact terminals as disclosed in Admission in the method of the Leon et al. patent in order to achieve the same advantage of measuring bioimpedance to calculate heart rate (motivation to combine provided by the instant application, page 1, line 20 through page 2, line 1).

Further regarding claim 9, steps (d)-(e), Leon et al. discloses the instant invention substantially as claimed, but does not expressly disclose the step of using a waveform converter to rectify the outputted waveform into a square wave. Richter'629 teaches a square wave rectifier (Fig. 2B, square wave 228) to output a POLAR OUT signal in the form of a square wave having a period frequency corresponding to heart rate for the

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purpose of achieving a standard format which can interface with most exercise equipment as well as wireless heart rate detectors, and to use this signal in order to execute a heart rate calculation using the processor of the apparatus (column 5, lines 19-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system as taught by Leon et al. with the square wave rectifier as taught by Richter'629 for the same advantage of achieving a standard format that can interface with most exercise equipment and wireless heart rate detectors (motivation to combine provided by Richter'629, column 5, lines 19-67).

Still further regarding claim 9, Leon et al. discloses the instant method substantially as claimed except for the step of producing a warning signal when the hands are not simultaneously touching the respective contact terminals. In the same field of endeavor, Golen et al. teaches the use of a warning signal in conjunction with an exercise system in order to prompt the user place his hands on the sensors so the computer can refresh the heart rate data and to deter the user from exercising beyond his aerobic level (column 4, lines 32-41). Also in the same field of endeavor, Barney'358 teaches using an audible alarm in conjunction with a heart beat monitor to warn a user if heart rate is too high or too low (column 9, lines 48-56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the Leon et al. device to include a warning signal when the contact terminals are not simultaneously touched for the same advantages of refreshing the heart rate data being monitored by the computer and to warn the user of an out-of-

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range heart rate that might indicate dangerous exertion levels (motivation to combine provided by Golen et al., column 4, lines 32-41 and Barney'358, column 9, lines 48-56).

Response to Arguments

6. Applicant's arguments with respect to claims 1 and 3-9 have been considered but are moot in view of the new ground(s) of rejection.

7. Applicant argues that Leon et al. does not teach the electrical relationship and result intended, or operate in the same manner, as claimed by Applicant.

In response to applicant's argument that Leon et al. does not operate in the same manner as claimed by Applicant, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. As outlined in the arguments made of record and restated above, Leon et al., in view of supporting documents, meets all of the structural limitations of the claimed invention.

Furthermore, Leon et al. does disclose a bi-point detection circuit (hands-off detector) that meets all the functional limitations of the claimed invention as well as outlined in the arguments above and further supported in columns 7-9, which correspond to figures 7 and 8.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher A. Flory whose telephone number is (571) 272-6820. The examiner can normally be reached on M - F 8:30 a.m. to 5:00 p.m..


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Angela Sykes can be reached on (571) 272-4955. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christopher A. Flory

16 October 2006



George Manuel
Primary Examiner